Alternative Sketch Network Analysis

In order to look at a future transportation network, it is necessary to first understand what traffic will look like in the future, based upon the accepted land use plan. The first step in this process was running the calibrated traffic model using the 2030 land use plan to see the effects on various networks.

The Continuing Growth Base Network was created to provide paved streets to the growth areas identified in the land use plan, but a number of its street widths were scaled back from what was shown in the 2025 network, in order to be more fiscally constrained.

Based on the model analysis, eleven sketch networks were developed to look at ways of providing needed transportation infrastructure to serve the future land uses. These were based on input received from the Planning Commission and the MPO Technical Committee. Of the alternatives analyzed, there were minimal differences between them. The one major factor that this analysis pointed out is that while at the current time (based on the 2004 Calibrated model) the average trip time is 7.9 minutes, the 2030 land use and networks will increase that to a range of between 13.5 to 14.1 minutes.

Traffic volumes on each link within the networks were determined under the 2030 land use scenario, allowing for an estimation of the number of lanes that will be needed on each link in the future. While it is not realistic to expect to be able to construct all these lanes with the limited funding available through 2030, the needed number of lanes will be shown in an illustrative map to ensure that sufficient right-of-way is obtained for these streets in the event funding does become available or community growth varies from the land use plan to the point where these streets are needed sooner than projected.

The next step in the process was estimating the cost of each network. Since an in-depth phasing plan of when each link will need to be constructed cannot be done at this time, all project costs are in 2006 dollars with no inflation.

An estimation of the revenue that will be available for funding roadway improvements was also completed. While this estimate does include some inflation, the funds primarily increase due to the increased population that will accompany the growth of the future land use plan. The estimate does not include any additional funding sources outside of what is currently available. The revenue estimate does assume that considerable amounts of outside funds will be made available to the City (State or Federal tax dollars, bond issues, new taxes, etc.) for construction of certain high cost improvements (Antelope Valley, South and East Beltways, etc.).

In order to assist in analyzing the various networks, a benefit to cost analysis was performed. The basis of this comparison was using the 2030 traffic on the 2004 network. The benefits derived in each case were savings in motorist time and vehicle operating costs versus the overloaded 2004 network. The analysis looked at the benefits of each alternate and then compared them to the costs for building the improvements detailed in each of the networks. While none of the alternative networks greatly stood out from the others based

on this analysis, the approved 2025 network did have one of the highest benefit to cost ratios. It should be noted that these benefits as noted are for the year 2030 only. The fact that the B/C ratio is less than one would not be the case if you were to look at the benefits over the life of the 2030 transportation plan.

The apparent reason why the 2025 network showed the best benefit/cost ratio is due to the fact that a four-lane roadway only costs about $1 million more than a two-lane roadway when both are initially built. The attempts to save costs using the Continuing Growth Base Network by reducing four-lane roads to two-lane roads would actually be more costly in the long run. While the reduction in number of lanes would save some costs, the benefits provided by the extra lanes outweighed the savings.

An analysis of travel times was also included to determine the differences between various networks. This analysis looked at the average travel time from various locations around the City. Due to the similarity with all the networks, the average travel times were nearly identical for each alternative network reviewed.

Based on the fact that the 2025 network has the lowest average trip time and the best benefit to cost ratio of the final alternatives, we recommend that the 2025 plan continue to be the base transportation network used in the Long Range Transportation Plan. Public Works recommends that the additional roadway improvements identified in the Continuing Growth Base Network (above those in the 2025 network) also be included as the preferred alternative (Alternative 12, as shown). We would also recommend including the six-laning of O Street (as recommended by the MPO Technical Committee) and Cornhusker Highway in the preferred alternative.